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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/975,507	10/12/2001	Ken C. K. Cheung	OCEANIT	9787

7590 10/28/2003
James C. Wray
Suite 300
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McLean, VA 22101

EXAMINER

DINH, TIEN QUANG

ART UNIT	PAPER NUMBER
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3644

DATE MAILED: 10/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/975,507

Applicant(s)

CHEUNG ET AL.

Examiner

Tien Dinh

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-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-47 is/are pending in the application.
- 4a) Of the above claim(s) 8-14, 16, 38 and 39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7, 15, 17-37 and 40-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 15, 17-24, 25, 28, 29, 31, 36, and 47 are rejected under 35 U.S.C.

102(b) as being anticipated by Lurz.

Lurz discloses a conformable skin element system having one or more conformable skin elements (each skin element are made up of parts number 1-4), that are shaped elements that inherently have more than two sides (we live in a three dimensional world) that are mounted on a surface of a vehicle, a controller/microcontroller 7 (with computer chips) powered inherently by a power supply, connections for coupling the skin elements to the controller (with wires), and a closed feedback control loop for generating and transmitting signals between the skin elements (see figure 1 and specification), the controller, and the connections for conforming the skin elements to desired deformations. The skin elements are pressure-transducer sensors 1, 3, and 4 that are piezoelectric in nature. The pressure-transducer provides signals to the feedback loop. The actuatable material is selected from mechanical, pneumatic, magnetic group (see column 4). Re claim 31, the skin element is the composed of elements 1-4. The skin element being a pressure transducer and a flow modifier, please note that the “skin element” is an element

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comprised of elements 1, 2, 3, and 4. This skin element acts as a transducer and a flow modifier which meets the claims.

Re claim 22 and 23, after the activation, the skin element would conform to the vehicle shape from a mounting perimeter since conforming to the vehicle shape are broad terms. Plus, when the skin element is mounted on the vehicle, it has a mounting pattern. Furthermore, the Examiner has interpreted elements 1, 2 (which are pressure transducers and flow modifier, respectively) as being one skin element. Elements 3, 2, and 4 are also interpreted as another skin element.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 26, 27, 32, 33-35, and 41-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lurz in view of Blackwelder et al.

Lurz discloses all claimed parts of the invention but is silent on the actuatable material being piezoelectric material. However, Blackwelder et al teaches that actuatable materials being piezoelectric/piezo ceramic are well known in the art.

It would have been obvious to one skilled in the art at the time the invention was made to have replaced element 2 of Lurz's system with piezoelectrical material/ceramic as taught by Blackwelder et al to create a more reliable vortex generator.

Re claims 41-46, it would have been obvious to one skilled in the art at the time the invention was made to have placed the skin element(s) at the aerodynamic forebody or mount the skin elements circumferentially about the tip of the forebody, or place the skin elements on either side of the windward ray of the forebody, or mount the skin elements 50-120 degrees apart, or evenly disposed the skin elements about the nose of the forebody for accommodating roll variability, or concentrate the skin elements on a windward half of the surface having no roll variability so as to allow the aircraft to fly safely with reduced drag and to allow the mission to be accomplished. Re claims 34-35, as for the additional pressure transducer being additional layer or multiple single layers of the skin element, please note that it is obvious to one skilled in the art to have used as many additional pressure transducer around the aircraft to get more data. Further, since the sensors of Lurz is made out of piezo crystal (which are well known to be layered, see column 3), it would have been obvious to have made the additional pressure transducers out of many layers of the skin element to create more rugged and stronger

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transducers. Please also note that the applicant has not disclosed the criticality of having the transducer being made of multiple layers of the skin element.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lurz in view of Mangalam.

Lurz discloses all claimed parts except for the use of amplifiers and filters in the control loop. However, Mangalam discloses that the use of amplifiers and filters (see figure 4) are well known in the art.

It would have been obvious to one skilled in the art at the time the invention was made to have used amplifiers and filters in Lurz's system as taught by Mangalam to allow the controller to efficiently create the desired vortex.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lurz in view of McKillip.

Lurz discloses all claimed parts of the invention but is silent on the actuable material being shape memory alloys. However, McKillip teaches that actuable materials being shape memory alloys are well known in the art.

It would have been obvious to one skilled in the art at the time the invention was made to have replaced element 2 of Lurz's system with shape memory alloys as taught by McKillip to create a more reliable vortex generator.

Claims 37 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lurz in view of Wygnanski

Lurz discloses all claimed parts of the invention but is silent on the actuatable material being mountable like a cantilever. However, Wygnanski teaches that actuatable materials being mountable like a cantilever are well known in the art.

It would have been obvious to one skilled in the art at the time the invention was made to have replaced element 2 of Lurz's system with mountable cantilever as taught by Wygnanski to create a more reliable vortex generator.

Response to Arguments

The finality of the previous office action has been dropped. However, this office action is made final. See below.

In response to applicant's arguments on the Lurz reference on page 4, please note that the Examiner has interpreted elements 1, 2 as being one skin element and elements 3, 2, 4 comprises another skin element. In response to applicant's argument on page 4 that the Lurz reference does not disclose that the conforming skin elements are responsive to signals received from the same skin elements, the Examiner would like to point out that the claim 1 does not call for this. Therefore, the applicant's argument is moot. Lurz discloses all the claimed elements and as show in figure 1 (see the rejections above).

As for the Blackwelder reference, the Examiner merely used the reference to teach that actuatable materials being made out of piezoelectric/piezo ceramic are well known. The Examiner does not in any way suggest that the Blackwelder et al's elements be used in the Lurz reference. Why couldn't Lurz's actuatable elements be made out of piezo materials? The arrangement of the Lurz's elements would not prevent one skilled in the art to have used piezoelectric/piezo. The applicant is invited to submit evidence as to why a piezoelectric material can not be arranged as taught by Lurz.

As for the Mangalam reference, please note that Mangalam is used to show that amplifiers and filters are well known. The filters and amplifiers are used to filter and amplify the signals being sent from the sensor so that the actuatable skin elements can optimize the control of the flow of air over the aircraft. There is a valid motivation to combine.

As for the McKillip, the Examiner merely used the reference to teach that actuatable materials being made out of shape memory alloys are well known. It is not known how the applicant can argue that shape memory alloys would harm the Lurz reference. Is there proof that shape memory alloys can harm the Lurz's system if the actuatable elements are made of shape memory alloys? If Lurz's actuatable elements are made of shape memory alloys as taught by McKillip, the system would not be harmed.

As for Wygnanski reference, it is not understood how the teaching of Wygnanski's cantilever contradicts the Lurz reference. The Wygnanski reference teaches that an actuable material being mounted like a cantilever is well known. Therefore, it would have been obvious to mount the actuable material like a cantilever to create a more reliable vortex generator.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

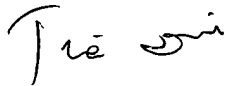
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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tien Dinh whose telephone number is 703-308-2789. The examiner can normally be reached on 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Jordan can be reached on 703-306-4159. The fax phone numbers for the organization where this application or proceeding is assigned are 703-306-4195 for regular communications and 703-306-4195 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-4195.

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A handwritten signature in cursive script, appearing to read "Tien Dinh".